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ORNITHOLOGICAL LITERATURE

BEHAVIOURAL ECOLOGY: AN EVOLUTIONARY APPROACH. By John R. Krebs and Nicholas B. Davies (eds.). Sinauer Assoc., Sunderland, Mass., 1978: xi + 494 pp., 86 numbered figures, 11 tables. $34.00 cloth, $18.50 paper.—Among a number of recent, similarly titled syntheses of ecology and behavior, this book stands as a novel and stimulating exception. Normally, such books either follow textbook format or consist of separately authored, at best loosely related papers stapled together and given a single, all encompassing title. Krebs and Davies offer a successful innovation based on the latter approach. The resulting book is both an up-to-date summary of research in a rapidly expanding field of ecology, and a warehouse of new, as yet little-tested ideas and fields of exploration.

The book contains 14 review papers by as many authors, all but 3 from British universities. The papers are grouped into 3 somewhat artificial categories, each with an introduction by the editors, dealing with (1) predatory and anti-predatory strategies, (2) sex, mating, and communication, and (3) environmental and reproductive life-history strategies. The writing and carefully cross-referenced editing are aimed at providing serious, upper level students of behavior with succinct summaries of "areas in which ethology, ecology, and the theory of natural selection have come together in the last few years to create new and stimulating ideas" (p. ix, preface). A distinctly theoretical perspective underlies and unites every paper, although little formal mathematics is used or required of the reader. Most of the reviews concentrate on examining experimental or field data that demonstrate and test certain theoretical ideas. As such, the book cannot and should not replace more general textbooks that outline basic concepts of behavior and ecology. Many areas of animal behavior are not covered, including learning, navigation and locomotion, migration, coevolution, and communication (beyond the abstract, theoretical level in Ch. 10). Rather, the topical nature of the individual chapters introduces the student, primarily through examples, to hypothesis testing and to a set of modern concepts regarding strategic optimization in time and energy allocation, social organization, reproductive output, and the use of space. Because many of these concepts are still in the midst of being tested and formalized, an air of excitement pervades the writing in virtually every chapter. Fresh approaches and some new, original data make the book as valuable to the seasoned professional as it is to the student.

The text is abundantly cross referenced, providing continuity between different chapters that use similar concepts. Among the recurring themes are optimal foraging theory, kin selection, sexual selection, and Maynard Smith's widely cited "evolutionarily stable strategy" (ESS). Nearly 900 literature references are grouped in the back, and following each entry is a list of locations in the text where the work is cited. This useful feature makes the book an encyclopedic reference text even for the casual user. As a measure of the recent explosion of work in this field, the median year of publication in this vast list of references is 1973. Complete subject and organism indexes are also provided.

The editors open with a general chapter outlining concepts and approaches used repeatedly in the book, paying particular homage to advances made by D. Lack, J. H. Crook, and R. H. MacArthur. Above all, they emphasize the revolutionary contribution to social theory made by W. D. Hamilton, whose treatise on kin selection "provide(s) a genetical framework for interpretting all social behaviour. His idea underlies the thinking on almost every page of this book" (p. 14). This slight overstatement—echoing the thesis of Dawkins' *The Selfish Gene*—accurately demonstrates the academic biases of most of the book's authors.

Certain chapters will be of particular interest to researchers in avian behavioral ecology. Krebs (Ch. 2) gives an excellent review of experimental and field tests of optimal foraging strategies, analyzed from the perspective of how predators should—and apparently do—make decisions regarding where to forage and what prey to eat. B. C. R. Bertram (Ch. 3)

and S. T. Emlen (Ch. 9) review the theoretical advantages to group-living in vertebrates. Bertram approaches the question primarily in terms of finding prey and avoiding predators. Emlen reviews cooperative breeding in birds, emphasizing 3 very different case histories (Florida Scrub Jays [*Aphelocoma coerulescens*], Groove-billed Anis [*Crotophaga sulcirostris*], and White-fronted Bee-eaters [*Merops bulockoides*]) where good field data are available. His review is more successful at precisely stating some of the appropriate cost-benefit questions, and listing the possible answers, than it is at providing direct answers for this complex problem. The reason for this lack of resolution—perhaps more acute here than in other chapters—is best explained by his concluding remark (p. 281) that "studies of cooperative behaviour remain in their infancy." Ecological factors pertaining to sex (Ch. 6) and sexual selection in the broad sense (Ch. 7) are discussed by J. Maynard Smith and T. R. Halliday, respectively. Both articles are well written reviews of recent advances in ancient controversies, and provide 2 of the book's best examples of where field analyses, even though extensive, still fall far short of theoretical work in their field. Dawkins and Krebs (Ch. 10) provide an innovative interlude with an essay questioning the classical perspective with which animal communication has been studied up to now. Building upon the "selfish gene" approach, they hold that animal signals are better viewed as selfish, manipulative devices, than as accurate displays of information or internal states. This "cynical" view of interactions between individuals directly contradicts classical ethological approaches, and is bound to stimulate debate in coming years. Davies (Ch. 11) reviews territoriality in birds and mammals, first in terms of its costs and benefits to individuals with differing habits, and, second, as it relates to population regulation. He adopts an extremely loose definition of territory: "whenever individual animals or groups are spaced out more than would be expected from (chance alone)" (p. 317). This definition may have forced Davies to slight his treatment of ecological determinants of territory size in favor of now less controversial questions regarding population regulation and proximate signals used in territorial defense. H. S. Horn (Ch. 14) presents the most easily read paper available that reviews theoretical ideas about life history strategies. Although Horn "personally think(s) that the terms 'r-selection' and 'K-selection' are barbaric" (p. 413), his elegant prose and simple graphical representations concisely explain why this apparent dichotomy between reproductive strategies is real in nature. As Horn (p. 411) correctly points out, "most of the theoretical discussions of tactics of life-history are (so) overloaded with turgid mathematical formalism (that) many of the important papers are unintelligible even to the authors of other important papers." In contrast, Horn's paper is a must for all who seek a brief, non-mathematical and unifying treatment of environmental relationships among body size, reproductive output, longevity and dispersal patterns.

Other chapters are on insect sociality (Heinrich), anti-predator strategies (Harvey and Greenwood), mate-searching strategies in dung-flies (a theoretical chapter with narrow scope, by Parker), habitat selection (spotty review including some circular reasoning, by Partridge), and "optimal behaviour sequences" (some sophisticated, difficult to follow rules for decision-making, by McCleery).

The book is a reasonably priced (in paperback), and highly readable summary of an expanding branch of ecology. In this branch the individual animal is viewed as having evolved into a scheming strategist whose every move, be it minute to minute, season to season, or generation to generation, is governed by an insatiable genetic drive toward selfish optimization. Precisely what is being optimized? Ultimately, the common currency is genetic fitness, which, because it is a *relative* measure, can never really be optimized. Instead, as assumed in this book, animals are pitted against the environment and one another in never-ending games, where the most successful strategist is the one that—by virtue of this success—leaves the greatest genetic contribution to succeeding generations. This is a critical and controversial assumption, and one that can be tested only indirectly at best. It is Dar-

winism carried toward its logical extreme. Krebs and Davies provide us with a series of reviews that summarize the progress made through 1978 in testing whether behavior conforms to this assumption.—JOHN W. FITZPATRICK.

ORNITHOLOGICAL NEWS

THIRD JOINT COS-WOS MEETING IN 1980

The third joint meeting of The Cooper Ornithological Society and The Wilson Ornithological Society will be held in Corpus Christi, Texas, at the La Quinta Motor Inn from 19–23 March 1980. Paper sessions are scheduled to start the morning of 20 March. The announcement of schedule and arrangements, and a call for papers, will be mailed to members of COS, WOS and AOU using the new Ornithological Societies of America mailing labels. This mailing is scheduled for 1 December 1979. The sponsoring organizations of the meeting are Corpus Christi State University and the Coastal Bend Chapter of the National Audubon Society. Chairpersons of the committees on arrangements and on scientific program are, respectively, Brian R. Chapman, Division of Biology, Corpus Christi State University, Corpus Christi, Texas 78412, and Jerome A. Jackson, Department of Zoology, P.O. Drawer Z, Mississippi State University, Mississippi State, Mississippi 39762.

FIFTH PAN-AFRICAN ORNITHOLOGICAL CONGRESS

The Fifth Pan-African Ornithological Congress will be held 23–30 August 1980, in Lilongwe, Malawi. The theme is "Current state of knowledge of African birds" (with pointers to future research). Pre- and post-congress excursions are planned to indigenous forests, mountain areas, lake shore, game parks and nature reserves, offering a variety of habitats of ornithological interest within Malawi. Registration fees are due 31 March 1980. For applications and further information please contact Len Gillard, Executive Secretary, Fifth Pan-African Ornithological Congress, P.O. Box 84394, Greenside, Johannesburg 2034, South Africa.

SEVENTH WOODCOCK SYMPOSIUM

The Seventh Woodcock Symposium will be held 28–30 October 1980, at University Park, Pennsylvania. The symposium is being co-sponsored by the Pennsylvania State University, the Pennsylvania Game Commission and the U.S. Fish and Wildlife Service. Persons wishing to present papers on any aspect of woodcock research or management should send title and abstract to: Review Committee Chairman Thomas Dwyer, Migratory Bird and Habitat Research Laboratory, U.S. Fish and Wildlife Service, Laurel, Maryland 20811 (301/776-4880). Abstracts should be limited to 200–250 words and be submitted before 1 March 1980. Papers accepted by the Review Committee will be published in the Symposium Proceedings. Persons considering attending the symposium can obtain future announcements by writing Mr. Dwyer.